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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/791,868	Applicant(s) SUGIMOTO, TASUKU	
	Examiner EDWARD PARK	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. Examiner notes that the newly amended claim does not constitute the title as being any more descriptive than the original title as originally filed.

Claim Rejections - 35 USC § 101

2. In response to applicant's amendment of claim 20, the previous claim rejection is withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1, 5-9, 11, 12, 13, 14, 18, 19, 20** are rejected under 35 U.S.C. 102(b) as being anticipated by Norimatsu (US 6,415,053 B1) and in view of Jayant et al (US 7,155,067 B2).

Regarding **claim 1**, Norimatsu discloses an image processing device for processing an original image including multiple pixels to create a new image, each of the multiple pixels having a pixel value, the device comprising:

an extracting unit extracting, from multiple pixel values of multiple pixels, an original pixel value of a pixel and pixel values of surrounding pixels that are positioned to surround the subject pixel, the subject pixel and the surrounding pixels being arranged in a matrix configuration (see fig. 10a1-8; col. 3, lines 63-67; col. 4, lines 1-12, pixel of interest and its surrounding pixels from pixel values of the pixel of interest and its surrounding pixels of image composed of the color image signals that are to be subjected to image processing);

a first calculating unit calculating a differential vector for the subject pixel by performing a differential operation on the pixel values of the surrounding pixels and calculating a vector magnitude of the differential vector and a vector direction of the differential vector (see col. 3, lines 63-67; col. 4, lines 1-12, calculating gradients representing directions and intensities of a pixel of interest and its surrounding pixels from pixel values of the pixel of interest and its surrounding pixels of image composed of the color image signals). Norimatsu does not disclose a second calculating unit calculating a new pixel value of the subject pixel based on the original pixel value of the subject pixel, a value determined dependently on the vector magnitude, and a pixel value of an adjustment pixel, the adjustment pixel being one of at least one first candidate surrounding pixel and at least one second candidate surrounding pixel, the at least one first candidate surrounding pixel being positioned in the vector direction, the at least one second candidate surrounding pixel being positioned in an opposite vector direction to the vector direction, the adjustment pixel having a pixel value closest to the original pixel value of the

subject pixel among the at least one first candidate surrounding pixel and the at least one second candidate surrounding pixel; and a setting unit setting the new pixel value to the subject pixel, thereby obtaining a new image.

Jayant, in the same field of endeavor, teaches a second calculating unit calculating a new pixel value of the subject pixel based on the original pixel value of the subject pixel, a value determined dependently on the vector magnitude, and a pixel value of an adjustment pixel, the adjustment pixel being one of at least one first candidate surrounding pixel and at least one second candidate surrounding pixel, the at least one first candidate surrounding pixel being positioned in the vector direction, the at least one second candidate surrounding pixel being positioned in an opposite vector direction to the vector direction, the adjustment pixel having a pixel value closest to the original pixel value of the subject pixel among the at least one first candidate surrounding pixel and the at least one second candidate surrounding pixel (see fig. 13, col. 14, lines 1-26; image intensity of the surroundings pixels (e.g., luminance, chrominance) can be used to determine an appropriate smoothing of pixel x.sub.0; an image intensity median can be determined among the subject pixel and each surrounding adjacent pixel in each of the four directions identified in figure 13; z is determined by the formula z = median value of pixels in direction l where l=1, 2, 3, and 4; accordingly, the adjusted image intensity, x.sub.0', is the median of the maximum intensity found, the minimum intensity found, and the subject pixel's original intensity, x.sub.0); and a setting unit setting the new pixel value to the subject pixel, thereby obtaining a new image (see figure 13, col. 14, lines 1-26; accordingly, the adjusted image intensity, x.sub.0' is the median of the maximum intensity found, the minimum intensity found, and the subject pixel's original intensity, x.sub.0).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Norimatsu reference to utilize a second calculating unit by adjusting a subject pixel with a surrounding pixel as suggested by Jayant, to reduce SP noise in a manner that is adaptive to the environment (i.e. background) in which the subject cell resides which filters the image for further improved edge detection and enhancement (see col. 14, lines 1-26).

Regarding **claim 5**, Norimatsu discloses performing the differential operation by using a Sobel filter (see col. 17, lines 35-51, Sobel operator).

Regarding **claim 6**, Norimatsu discloses performing the differential operation by using a Prewitt filter (see col. 17, lines 35-51 Prewitt operator).

Regarding **claim 7**, Norimatsu discloses subject pixel and the surrounding pixels are arranged in an n x n matrix configuration, where n is an odd number that is equal to or greater than three (see fig. 10a1-8; col. 17, lines 35-51, matrix that is 3x3 or 5x5).

Regarding **claim 8**, Norimatsu discloses subject pixel is a central pixel that is positioned at a center of the n x n matrix (see col. 17, lines 35-67).

Regarding **claim 9**, Norimatsu discloses n x n matrix is a 3 x 3 matrix (see fig. 10a1-8; col. 17, lines 35-51, matrix that is 3x3).

Regarding **claim 11**, Norimatsu discloses n x n matrix is a 5 x 5 matrix (see col. 17, lines 35-51, matrix that is 5x5).

Regarding **claim 12**, Norimatsu discloses an image forming unit forming the new image on a medium (see fig. 15, numeral 116M, 118; col. 26, lines 21-47, output the processed image data outside the apparatus as an image file such as a CD or laser printer unit 118).

Regarding **claim 13**, Norimatsu discloses an image processing device for processing an original image including multiple pixels to create a new image, each of the multiple pixels having a pixel value, the device comprising:

an extracting unit extracting, from multiple pixel values of multiple pixels, an original pixel value of a subject pixel and pixel values of surrounding pixels that are positioned to surround the subject pixel, the subject pixel. and the surrounding pixels being arranged in a 3x3 matrix configuration (see fig. 10a1-8; col. 3, lines 63-67; col. 4, lines 1-12, pixel of interest and its surrounding pixels from pixel values of the pixel of interest and its surrounding pixels of image composed of the color image signals that are to be subjected to image processing);

a first calculating unit calculating a differential vector for the subject pixel by performing a differential on the pixel values of the surrounding pixels and calculating a vector magnitude of the differential vector and a vector direction of the differential vector (see col. 3, lines 63-67; col. 4, lines 1-12, calculating gradients representing directions and intensities of a pixel of interest and its surrounding pixels from pixel values of the pixel of interest and its surrounding pixels of image composed of the color image signals).

Norimatsu does not disclose a second calculating unit calculating a new pixel value of the subject pixel based on the original pixel value the subject pixel, a value determined dependently on the vector magnitude, and a pixel value of an adjustment pixel, the adjustment pixel being one of a first candidate surrounding pixel positioned in the vector direction and a second candidate surrounding pixel positioned in an opposite vector direction opposite to the vector direction, the adjustment pixel having a pixel value closer to the original pixel value of the subject pixel than

the other candidate surrounding pixel; and a setting unit setting the new pixel value to the subject pixel, thereby obtaining a new image.

Jayant, in the same field of endeavor, teaches a second calculating unit calculating a new pixel value of the subject pixel based on the original pixel value the subject pixel, a value determined dependently on the vector magnitude, and a pixel value of an adjustment pixel, the adjustment pixel being one of a first candidate surrounding pixel positioned in the vector direction and a second candidate surrounding pixel positioned in an opposite vector direction opposite to the vector direction, the adjustment pixel having a pixel value closer to the original pixel value of the subject pixel than the other candidate surrounding pixel (see fig. 13, col. 14, lines 1-26; image intensity of the surroundings pixels (e.g., luminance, chrominance) can be used to determine an appropriate smoothing of pixel x.sub.0; an image intensity median can be determined among the subject pixel and each surrounding adjacent pixel in each of the four directions identified in figure 13; z is determined by the formula z = median value of pixels in direction l where l=1, 2, 3, and 4; accordingly, the adjusted image intensity, x.sub.0', is the median of the maximum intensity found, the minimum intensity found, and the subject pixel's original intensity, x.sub.0); and a setting unit setting the new pixel value to the subject pixel, thereby obtaining a new image (see figure 13, col. 14, lines 1-26; accordingly, the adjusted image intensity, x.sub.0' is the median of the maximum intensity found, the minimum intensity found, and the subject pixel's original intensity, x.sub.0).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Norimatsu reference to utilize a second calculating unit by adjusting a subject pixel with a surrounding pixel as suggested by Jayant, to reduce SP noise in a manner

that is adaptive to the environment (i.e. background) in which the subject cell resides which filters the image for further improved edge detection and enhancement (see col. 14, lines 1-26).

Regarding **claim 14**, Norimatsu discloses an image processing method of processing an original image including multiple pixels to create a new image, each of the multiple pixels having a pixel value, the method comprising:

extracting, from multiple pixel values of multiple pixels, an original pixel value of a subject pixel and pixel values of surrounding pixels that are positioned to surround the subject pixel, the subject pixel and the surrounding pixels being arranged in a matrix configuration (see fig. 10a1-8; col. 3, lines 63-67; col. 4, lines 1-12, pixel of interest and its surrounding pixels from pixel values of the pixel of interest and its surrounding pixels of image composed of the color image signals that are to be subjected to image processing);

calculating a differential vector for the subject pixel by performing a differential operation on the pixel values of the surrounding pixels and calculating a vector magnitude of the differential vector and a vector direction of the differential vector (see col. 3, lines 63-67; col. 4, lines 1-12, calculating gradients representing directions and intensities of a pixel of interest and its surrounding pixels from pixel values of the pixel of interest and its surrounding pixels of image composed of the color image signals). Norimatsu does not disclose calculating a new pixel value of the subject pixel based on the original pixel value of the subject pixel, a value determined dependently on the vector magnitude, and a pixel value of an adjustment pixel, the adjustment pixel being one of at least one first candidate surrounding pixel and at least one second candidate surrounding pixel, the at least one first candidate surrounding pixel being positioned in the vector direction, the at least one second candidate surrounding pixel being positioned in an opposite

vector direction opposite to the vector direction, the adjustment pixel having a pixel value closest to the original pixel value of the subject pixel among the at least one first candidate surrounding pixel and the at least one second candidate surrounding pixel; and setting the new pixel value to the subject pixel, thereby obtaining a new image.

Jayant, in the same field of endeavor, teaches calculating a new pixel value of the subject pixel based on the original pixel value of the subject pixel, a value determined dependently on the vector magnitude, and a pixel value of an adjustment pixel, the adjustment pixel being one of at least one first candidate surrounding pixel and at least one second candidate surrounding pixel, the at least one first candidate surrounding pixel being positioned in the vector direction, the at least one second candidate surrounding pixel being positioned in an opposite vector direction opposite to the vector direction, the adjustment pixel having a pixel value closest to the original pixel value of the subject pixel among the at least one first candidate surrounding pixel and the at least one second candidate surrounding pixel (see fig. 13, col. 14, lines 1-26; image intensity of the surroundings pixels (e.g., luminance, chrominance) can be used to determine an appropriate smoothing of pixel x.sub.0; an image intensity median can be determined among the subject pixel and each surrounding adjacent pixel in each of the four directions identified in figure 13; z is determined by the formula z = median value of pixels in direction l where l=1, 2, 3, and 4; accordingly, the adjusted image intensity, x.sub.0', is the median of the maximum intensity found, the minimum intensity found, and the subject pixel's original intensity, x.sub.0); and setting the new pixel value to the subject pixel, thereby obtaining a new image (see figure 13, col. 14, lines 1-26; accordingly, the adjusted image intensity, x.sub.0' is the median of the

maximum intensity found, the minimum intensity found, and the subject pixel's original intensity, x.sub.0).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Norimatsu reference to utilize a second calculating unit by adjusting a subject pixel with a surrounding pixel as suggested by Jayant, to reduce SP noise in a manner that is adaptive to the environment (i.e. background) in which the subject cell resides which filters the image for further improved edge detection and enhancement (see col. 14, lines 1-26).

Regarding **claim 18**, Norimatsu discloses performing the differential operation by using a Sobel filter (see col. 17, lines 35-51, Sobel operator).

Regarding **claim 19**, Norimatsu discloses performing the differential operation by using a Prewitt filter (see col. 17, lines 35-51 Prewitt operator).

Regarding **claim 20**, Norimatsu discloses a computer readable storage medium for storing a program (see col. 26, lines 21-33; image memory holds various image processing operations including corrections) of processing an original image including multiple pixels to create a new image, each of the multiple pixels having a pixel value, the program comprising the programs of:

extracting, from multiple pixel values of multiple pixels, an original pixel value of a subject pixel and pixel values of surrounding pixels that are positioned to surround the subject pixel, the subject pixel and the surrounding pixels being arranged in a matrix configuration (see fig. 10a1-8; col. 3, lines 63-67; col. 4, lines 1-12, pixel of interest and its surrounding pixels from pixel values of the pixel of interest and its surrounding pixels of image composed of the color image signals that are to be subjected to image processing);

calculating a differential vector for the subject by performing a differential operation on the pixel values of the surrounding pixels and calculating a vector magnitude of the differential vector and a vector direction of the differential vector (see col. 3, lines 63-67; col. 4, lines 1-12, calculating gradients representing directions and intensities of a pixel of interest and its surrounding pixels from pixel values of the pixel of interest and its surrounding pixels of image composed of the color image signals). Norimatsu does not disclose calculating a new pixel value of the subject pixel based on the original pixel value of the subject pixel, a value determined dependently on the vector magnitude, and a pixel value of an adjustment pixel, the adjustment pixel being one of at least one first candidate surrounding pixel and at least one second candidate surrounding pixel, the at is least one first candidate surrounding pixel being positioned in the vector direction, the at least one second candidate surrounding pixel being positioned in an opposite vector direction opposite to the vector direction, the adjustment pixel having a pixel value closest to the original pixel value of the subject pixel among the at least one first candidate surrounding pixel and the at least one second candidate surrounding pixel; and

setting the new pixel value to the subject pixel, thereby obtaining a new image.

Jayant, in the same field of endeavor, teaches calculating a new pixel value of the subject pixel based on the original pixel value of the subject pixel, a value determined dependently on the vector magnitude, and a pixel value of an adjustment pixel, the adjustment pixel being one of at least one first candidate surrounding pixel and at least one second candidate surrounding pixel, the at is least one first candidate surrounding pixel being positioned in the vector direction, the at least one second candidate surrounding pixel being positioned in an opposite vector direction opposite to the vector direction, the adjustment pixel having a pixel value closest to the original

pixel value of the subject pixel among the at least one first candidate surrounding pixel and the at least one second candidate surrounding pixel (see fig. 13, col. 14, lines 1-26; image intensity of the surroundings pixels (e.g., luminance, chrominance) can be used to determine an appropriate smoothing of pixel x.sub.0; an image intensity median can be determined among the subject pixel and each surrounding adjacent pixel in each of the four directions identified in figure 13; z is determined by the formula z = median value of pixels in direction l where l=1, 2, 3, and 4; accordingly, the adjusted image intensity, x.sub.0', is the median of the maximum intensity found, the minimum intensity found, and the subject pixel's original intensity, x.sub.0); and setting the new pixel value to the subject pixel, thereby obtaining a new image (see figure 13, col. 14, lines 1-26; accordingly, the adjusted image intensity, x.sub.0' is the median of the maximum intensity found, the minimum intensity found, and the subject pixel's original intensity, x.sub.0).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the Norimatsu reference to utilize a second calculating unit by adjusting a subject pixel with a surrounding pixel as suggested by Jayant, to reduce SP noise in a manner that is adaptive to the environment (i.e. background) in which the subject cell resides which filters the image for further improved edge detection and enhancement (see col. 14, lines 1-26).

5. **Claims 2, 3, 4, 15, 16, 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Norimatsu (US 6,415,053 B1) with Jayant et al (US 7,155,067 B2), and further in view of Miller et al (US 4,941,191).

Regarding **claims 2, 3, 4**, Norimatsu with Jayant discloses all elements as mentioned above in claim 1. Norimatsu with Jayant further discloses multiple pixels are arranged in an x-

direction and a y-direction, wherein the subject pixel is located at a two dimensional location (i, j) that is x-direction and y-direction coordinates of the subject pixel (see figures 10a1-a8). Norimatsu with Jayant does not disclose a second calculating unit calculates the new pixel value of the subject pixel based on an equation: g (i , j) = f(I, j) + KT x (G - f (i , j)) where g (i , j) is the new pixel value of the subject pixel, f(l, j) i s the original pixel value of the subject pixel, KT is the value determined dependently on the vector magnitude, and G is the pixel value of the adjustment pixel; and wherein the value KT has a value satisfying an inequality 0 <= KT <= 1; and a comparing unit comparing the vector magnitude with at least one of a first threshold value and a second threshold value that is greater than the first threshold value; and a KT setting unit setting the value KT to a value of zero (0) , when the vector magnitude is less than or equal to the first threshold value, thereby allowing the new pixel value g (i , j) to take a value that is the same as the lo original pixel value f (i, j) , the KT setting unit: setting the value KT to a value between zero (0) and one (1), when the vector magnitude is greater than the first threshold value and is leas than or equal to the second threshold value, thereby allowing the new pixel value g (i , j) to take a value between the original pixel value f(i, j) and the pixel value of the adjustment pixel G, and the KT setting unit setting the value KT to a value of one (1), when the vector magnitude is greater than the second threshold value, thereby allowing the new pixel value g(i, j) to take a value that is the same as the pixel value of the adjustment pixel.

Miller, in the same field of endeavor, teaches a second calculating unit calculates the new pixel value of the subject pixel based on an equation: g (i , j) = f(i, j) + KT x (G - f (i , j)) where g (i , j) is the new pixel value of the subject pixel, f(i, j) i s the original pixel value of the subject pixel, KT is the value determined dependently on the vector magnitude, and G is the pixel value

of the adjustment pixel; and wherein the value KT has a value satisfying an inequality 0 <= KT <= 1 (see col. 9, lines 18-68); and a comparing unit comparing the vector magnitude with at least one of a first threshold value and a second threshold value that is greater than the first threshold value; and a KT setting unit setting the value KT to a value of zero (0) , when the vector magnitude is less than or equal to the first threshold value, thereby allowing the new pixel value g (i , j) to take a value that is the same as the original pixel value f (i, j) , the KT setting unit: setting the value KT to a value between zero (0) and one (1), when the vector magnitude is greater than the first threshold value and is leas than or equal to the second threshold value, thereby allowing the new pixel value g (i , j) to take a value between the original pixel value f(i, j) and the pixel value of the adjustment pixel G, and the KT setting unit setting the value KT to a value of one (1), when the vector magnitude is greater than the second threshold value, thereby allowing the new pixel value g(i, j) to take a value that is the same as the pixel value of the adjustment pixel (see col. 12, lines 26-55).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the reference Norimatsu with Jayant combination to utilize the equations to a form new pixel value and vary the values of the threshold as taught by Miller, to process the pixel values through a high-pass filter for processing of extracted information for the enhanced detection of anomalies within the image (see col. 8, lines 45-56).

Regarding **claims 15, 16, 17**, Norimatsu with Jayant combination discloses all elements as mentioned above in claim 14. Norimatsu with Jayant combination further discloses multiple pixels are arranged in an x-direction and a y-direction, wherein the subject pixel is located at a two dimensional location (i, j) that is x-direction and y-direction coordinates of the subject pixel

(see figures 10a1-a8). Norimatsu does not disclose a second calculating unit calculates the new pixel value of the subject pixel based on an equation: g (i , j) = f(i, j) + KT x (G - f (i , j)) where g (i , j) is the new pixel value of the subject pixel, f(l, j) i s the original pixel value of the subject pixel, KT is the value determined dependently on the vector magnitude, and G is the pixel value of the adjustment pixel; and wherein the value KT has a value satisfying an inequality 0 <= KT <= 1; and comparing the vector magnitude with. at least one of a first threshold value and a second threshold value that is greater than the first threshold value; and setting the value KT to a value of zero (0) , when the vector magnitude is less than or equal to the first threshold value, thereby allowing the new pixel value g (i, j) to take a value that is the same as the original pixel value f (i, j), setting the value KT to a value between zero (0) and one (1), when the vector magnitude is greater than the first threshold value and is less than or equal to the second threshold value, thereby allowing the new pixel value g(i, j) ,to take a value between the original pixel value f(i,
j) and the pixel value of the adjustment pixel G, and setting the value KT to a value of one (1), when the vector magnitude is greater than the second threshold value, thereby allowing the new pixel value g(i, j) to take a value that is the same as the pixel value of the adjustment pixel.

Miller, in the same field of endeavor, teaches a second calculating unit calculates the new pixel value of the subject pixel based on an equation: g (i , j) = f(i, j) + KT x (G - f (i , j)) where g (i , j) is the new pixel value of the subject pixel, f(i, j) i s the original pixel value of the subject pixel, KT is the value determined dependently on the vector magnitude, and G is the pixel value of the adjustment pixel; and wherein the value KT has a value satisfying an inequality 0 <= KT <= 1 (see col. 9, lines 18-68); and comparing the vector magnitude with. at least one of a first

threshold value and a second threshold value that is greater than the first threshold value; and setting the value KT to a value of zero (0) , when the vector magnitude is less than or equal to the first threshold value, thereby allowing the new pixel value g (i, j) to take a value that is the same as the original pixel value f (i, j), setting the value KT to a value between zero (0) and one (1), when the vector magnitude is greater than the first threshold value and is less than or equal to the second threshold value, thereby allowing the new pixel value g(i, j) ,to take a value between the original pixel value f(i, j) and the pixel value of the adjustment pixel G, and setting the value KT to a value of one (1), when the vector magnitude is greater than the second threshold value, thereby allowing the new pixel value g(i, j) to take a value that is the same as the pixel value of the adjustment pixel (see col. 12, lines 26-55).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the reference Norimatsu with Jayant combination to utilize the equations to a form new pixel value and vary the values of the threshold as taught by Miller, to process the pixel values through a high-pass filter for processing of extracted information for the enhanced detection of anomalies within the image (see col. 8, lines 45-56).

6. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Norimatsu (US 6,415,053 B1) with Jayant et al (US 7,155,067 B2), and further in view of Mancuso et al (US 2001/0031097 A1).

Regarding **claim 10**, Norimatsu with Jayant combination discloses all elements as mentioned above in claim 9. Norimatsu with Jayant combination further discloses multiple pixels are arranged in an x-direction and y-direction, i and j being respectively x-direction and y-direction coordinates of the subject pixel,

wherein the differential vector has an x-directional component H (i , j) and a y-directional component V (i , j) expressed by equations:

H (i , j) = -1 x f(i-1, j-1) -2 x f(i-1, j) -1 x f(i-I, j + 1) + f(i+l, j-1) +2 f (i + 1 , j) + f (i+l, j+l), and

V (i , j) - -1 x f (i-1, 1-11 + f (i-1, j+l) -2 x f(i, j-1) +2 x f(i, j+l) -1 x f (i+l, j-1) + f(i+l, j+l),

where f (i-1, 1-1) , f (i-1, j), f (i-1, j+l) , f(i, j-1), f (i, 1) f (i+l, - 1 , f (i+l, j), and f (i+l, 1) are respectively the pixel values of the surrounding pixels that are located at two-dimensional locations (i-1, j-1) , (i-1, j), (i-1, j+l), (i, j-1), (i, j+l), (i+l, j-1), (i+l, j), and (i+l, j+l) (see figures 10a1 and 10a7, col. 22, lines 47-67; col. 23, lines 1-9). Norimatsu does not disclose a vector magnitude of the differential vector is expressed by an equation (as shown in claim 10) and a vector direction of the differential vector is expressed by an equation (as shown in claim 10).

Mancuso, in the same field of endeavor, teaches a vector magnitude of the differential vector is expressed by an equation (as shown in claim 10) (see paragraph [0026], magnitude of the vector) and a vector direction of the differential vector is expressed by an equation (as shown in claim 10) (see paragraph [0028], direction angle of the vector).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to modify the reference Norimatsu with Jayant combination to utilize the equations to calculate the vector magnitude and vector direction as taught by Mancuso, to pre-process for extracting image pixels which can provide both differencing and smoothing which compensates for noise (see paragraph [0024]). Examiner notes that these formulas are well known both in image analysis and in analytical mathematics in regards to vector calculations.

Response to Arguments

7. Applicant's arguments, see pg. 11, last paragraph, filed on 5/28/08, with respect to the rejection(s) of claim(s) 1, 13, 14, 20 under Norimatsu have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Norimatsu with Jayant as seen above in the rejection as Jayant meets the specific limitation within claims 1, 13, 14, and 20 (see pg. 11, last paragraph).

Applicant argues that Norimatsu does not disclose basing on a surrounding pixel positioned in the vector direction of a pixel of interest and another pixel positioned in an opposite vector direction of the pixel of interest (see pg. 12, second paragraph). This argument is not considered persuasive since the claim limitation does not actually claim the limitation that the applicant argues as seen in claim 1. The claim calls for "a pixel value of an adjustment pixel, the adjustment pixel being one of at least one first candidate surrounding pixel and at least one second candidate surround pixel". This claim limitation can be interpreted as only calling for one first candidate surrounding pixel. Or the claim limitation can be interpreted as only calling for one second candidate surrounding pixel. Regardless, as long as one candidate surrounding pixel is disclosed, the specified claim limitation will be met as can be seen in the Jayant reference. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "a pixel value of an adjustment pixel, the adjustment pixel being one of at least one first candidate surrounding pixel and at least one second candidate surround pixel") are not recited in the rejected claim(s).

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Applicant restates that Norimatsu fails to disclose the claim limitation of a second calculation unit …. and a setting unit setting the new pixel value to the subject pixel value (see pg. 13, second paragraph). This argument is not considered persuasive since the claim limitation is met by the new ground(s) of rejection under Norimatsu with Jayant combination.

Regarding **claims 5-9, 11, 12, 18 and 19**, applicant argues that the claims are allowable due to the dependency from claims 1, 13, 14, and 20 respectively (see pg. 13, second paragraph). This argument is not considered persuasive since the rejection of claims 1 and 14 stands and the arguments and rejection can be seen above.

Regarding **claims 2-4, 10 and 15-17**, applicant argues that the claims are allowable due to the dependency from claims 1 and 14, respectively (see pg. 13, last paragraph). This argument is not considered persuasive since the rejection of claims 1 and 14 stands and the arguments and rejection can be seen above.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to EDWARD PARK whose telephone number is (571)270-1576. The examiner can normally be reached on M-F 10:30 - 20:00, (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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